

UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
WASHINGTON, D.C. 20240

March 1, 2004

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EMS TRANSMISSION 03/09/2004  
Instruction Memorandum No. 2003-082, Change 1  
Expires: 09/30/2004

To: All Field Officials

From: Assistant Director, Minerals, Realty and Resource Protection

Subject: Reclamation Cost Estimates for Notices and Plans of Operations

**Program Area:** Mining Law Administration, Surface Management

**Purpose:** This Instruction Memorandum (IM) updates IM 2003-082 dated February 5, 2003, which provided guidance for the review and acceptance of reclamation cost estimates for Notices and Plans of Operations under the 43 CFR 3809 Surface Management Regulations. Since IM 2003-082 was issued, WO-300 and WO-880 have reexamined how the indirect cost associated with the forfeiture of mine reclamation financial guarantees is to be calculated (see Attachment page 1-7). Therefore, we are reissuing IM 2003-082, Change 1 with modified attachments (Attachments 1 through 4) which includes new guidance in the application of the indirect cost rate and provides additional guidance or clarification based on inquiries from the field.

**Policy/Action:** Bureau of Land Management (BLM) Offices must review reclamation cost estimates submitted by operators of Notices and Plans of Operations. The operators must post a financial guarantee sufficient to cover reclamation costs as if the BLM were hiring a third party contractor to perform reclamation of the project. The estimate must include all operating, maintenance and BLM administrative costs (43 CFR 3809.554). Operations to be conducted under a new or modified Notice or Plan of Operations may not commence until the operator has provided the BLM with an acceptable financial guarantee (43 CFR 3809.312(c), 3809.412, and 3809.555). Once the operator has provided the BLM with an acceptable financial guarantee, the BLM office responsible for adjudicating financial guarantees must provide the operator with a Financial Guarantee Accepted Decision.

**Time Frame:** This IM is effective immediately and will be in effect unless formally modified.

**Budget Impacts:** There will be a budget impact, but there is no estimate at this time.

**Background:** The revised surface management regulations became effective on January 20, 2001, with subsequent amendments that took effect through December 31, 2001. The final regulations require all Notices and Plans of Operations to post full-cost financial guarantees in an amount sufficient to allow BLM to contract with a third party to reclaim the operations according to 43 CFR 3809.552(a).

**Manual/Handbook Sections Impacted:** Bureau Manual Section 3809. This guidance will be included in the 3809 Surface Management Manual and Handbook that is now being prepared.

**Coordination:** IM 2003-082 was developed with input from the Office of the Solicitor, BLM State and Field Offices.

**Contact:** If you have any questions concerning this Instruction Memorandum, please contact T. Scott Murrellwright, Solid Minerals Group, at 202-785-6568.

Signed by:  
Bob Anderson  
Acting Assistant Director  
Minerals, Realty and Resource Protection

Authenticated by:  
Barbara J. Brown  
Policy & Records Group, WO-560

#### 4 Attachments

- 1 – BLM's Review and Evaluation Role (9 pp)
- 2 - Reclamation Cost Estimation Summary Sheet (3 pp)
- 3 - Reclamation Cost Checklist (3 p)
- 4 - Reclamation Cost Model for Notice-Level Operations (3 pp)

# Guidelines for Reviewing Reclamation Cost Estimates

## BLM's Review and Evaluation Role

BLM's task is to review and evaluate the operator's reclamation cost estimate for Notices and Plans of Operations under the 43 CFR 3809 regulations to determine if he/she has correctly identified and incorporated all of the applicable reclamation and administrative costs (identified below). The reclamation costs included in financial guarantee calculations for new Notices and Plans of Operations will be reviewed and evaluated based on the reclamation standards according to 43 CFR 3809.420.

Operator estimates of reclamation costs for extended Notices shall be reviewed based on the 43 CFR 3809.1-3(d) reclamation measures that were in effect immediately prior to January 20, 2001 (43 CFR parts 1000-end, revised as of October 1, 2000). In reviewing reclamation cost estimates for extended Notices, BLM must ensure that the operator documents what reclamation measures will be performed to meet the reclamation measures in 43 CFR 3809.1-3(d). BLM must agree that these measures will prevent unnecessary and undue degradation and documentation of these reclamation measures must be contained in the case file.

In performing the review of the operator's reclamation cost estimate, if the operator has not included BLM's administrative costs, the responsible BLM office will notify the operator, in writing, of those costs along with any deficiencies or additional information needed in order for BLM to complete the review. An operator is not required to hire a professional engineer or geologist to prepare a cost estimate but in some cases it may be desirable for them to do so. BLM may recommend this option to the operator, but may not recommend any specific individual or firm. It is not BLM's responsibility to calculate the reclamation cost for an operator, but BLM, at its discretion, may assist the operator in identifying costs to be included in the estimate and in developing the cost estimate.

## Reclamation Cost Estimate Assumptions and Conditions

The reclamation cost estimate must be based on the following assumptions and conditions:

- Costs must be estimated as if BLM were hiring a third party contractor to perform all required reclamation [43 CFR 3809.552(a)].
- Costs must include the use of off-site equipment as if the project area was vacated, and they must include all associated mobilization and demobilization costs [43 CFR 3809.554(a)].
- The estimate must cover all reclamation requirements in the Notice or approved Plan of Operations [43 CFR 3809.301(b), .401(d), .552(a) and 43 CFR 3809.1-3(d) for extended Notices].
- The estimate must include, when applicable, all interim maintenance while contracts are developed and executed [43 CFR 3809.552(a)].

- The estimate must cover costs to construct and maintain any identified long-term treatment facilities required by the filed Notice or approved Plan of Operations [43 CFR 3809.552(a)].
- Where applicable, labor costs must be based on federally (Davis-Bacon wages) mandated labor rates [as required by law and the Federal Acquisition Regulations (FAR) for contracts over \$2,000]. If the reclamation is solely for the dismantling, demolition, or removal of improvements, then contracting is under the Service Contract Act and Davis-Bacon wage rate does not apply. If construction, alteration or repair of the improvements is contemplated, even if it is under a separate contract, then the Davis-Bacon wages apply. ([www.access.gpo.gov/davisbacon](http://www.access.gpo.gov/davisbacon)).

**Maximum Reclamation Cost** – Past reclamation cost estimates have often been based on the assumption that the cost to reclaim a mine is greatest at the end of its projected life. This is, however, not always the case; and financial guarantees based on this assumption are often inadequate if the operator ceases operations prematurely. The point of maximum reclamation costs is more often when there is the greatest area of disturbance, greatest volume of materials needing special handling, or some other factor or combination of factors escalating the cost to reclaim. Unless the operator requests and the BLM authorizes a phased financial guarantee under 43 CFR 3809.553, the financial guarantee is for the entire life of mine. In reviewing the reclamation cost estimate, the BLM must make sure the reclamation cost estimate for a life-of-mine financial guarantee reflects the maximum cost of reclamation.

**Inflation** - Inflation can, over time, become a significant factor in the amount of the required financial guarantee. This is an especially important concern where the potential exists for a substantial time interval between the BLM's review of the reclamation cost estimate and the potential collection and use of the forfeited financial guarantee. To minimize the potential impact inflation can have on the amount of the financial guarantee needed to cover the reclamation cost, the Field Office must review on a periodic basis the reclamation cost estimates and financial guarantees for all ongoing operations as prescribed in this Instruction Memorandum.

### **Reclamation, Closure, Mitigation and Monitoring**

The reclamation operating and maintenance (O&M) costs reflect the direct costs of reclamation based on the details of the reclamation and closure work outlined in the Notice or approved Plan of Operations. Reclamation and closure tasks typically fall into the following categories:

- **Interim Operation and Maintenance** – If an operator abruptly ceases operations, immediate site operation and maintenance may be required to maintain the area of operation in compliance with applicable safety and environmental requirements. There is no preset time period for the care and maintenance of a site prior to the start of reclamation; much depends on our ability to obtain access to the financial guarantee, especially in bankruptcy cases. It is probably a good rule-of-thumb to allow for a minimum of 6 months. Large operations or project areas with limited seasonal access may warrant a longer time period.
- **Hazardous Materials** – This task may include the cost of decontaminating, neutralizing, disposing, treating or isolating hazardous materials used, produced, or stored on the site. The estimated cost for handling hazardous materials should assume, unless otherwise documented, the material is properly stored and labeled.

If upon site inspection, it is determined the operator is using, producing or storing material on site that could be hazardous, e.g. unlabeled barrels, and the BLM is unsuccessful in getting the operator to properly manage those materials (operator has failed to comply with a noncompliance order), the reclamation cost estimate should be updated to reflect the higher cost of disposing of such material. This distinction is important as the disposal of properly managed hazardous materials may be a fraction of the disposal cost for material that are not properly stored and identified.

- Water Treatment – If it is predicted that mine discharge or drainage will exceed relevant standards, all construction and maintenance water treatment costs need to be identified and included in the reclamation cost estimate. The cost of long term, post-mining operation, maintenance, and replacement requirements may be omitted from the reclamation cost estimate if they are addressed in a trust fund established under 43 CFR 3809.552(c).
- Demolition, Removal and Disposal – This task includes the demolition, removal and disposal of all mine facilities, equipment and material from the project area. Disposal costs for all facilities, except for those facilities which have been approved in writing by the BLM for post-mining BLM use, must be included in the reclamation cost estimate. No salvage value for structures, equipment or materials is allowed in the reclamation cost estimate.
- Earthwork – Earthwork includes, but not limited to, the cost of hauling, placement, regrading and backfilling to reclaim mine features, including roads that are to be reclaimed.
- Drill Hole Plugging – This task includes plugging, capping, and segregation of the drill holes from the ground water system. Specifically, care needs to be taken in determining plugging costs based upon whether drill holes encounter water, water under artesian pressure, or are dry. Proposed plugging must meet all applicable Federal and State requirements.

Where the operator is proposing drilling, the reclamation cost estimate must include the estimated plugging cost of at least one drill hole for each active drill rig in the project area. Where the submitted Notice or approved Plan of Operations calls for drill holes to be plugged, but doesn't specifically require the drill holes be plugged before the drill rig has been moved from the drill pad, the reclamation cost estimate must include the plugging cost for those drill holes. For all drill holes, and water, monitoring and piezometer wells scheduled to be left open, the estimated plugging cost must be included in the reclamation cost estimate. Where the approved Plan of Operations proposes immediate mining through an area where the drilling is to occur and the cost of the post-mining reclamation is included in the reclamation cost estimate, the cost estimate does not need to include the plugging costs for those drill holes. Plugging activity must, however, still comply with all applicable Federal and State requirements. If the State Director determines the State's financial guarantee requirements related to drill hole plugging accomplishes the same level of protection as this policy, the BLM may base the estimated plugging costs on the State requirements.

- Revegetation – This task includes the cost of obtaining an acceptable seed mix that will result in a diverse plant community that includes grasses, forbs, shrubs and/or trees, soil preparation, such as ripping or harrowing, application of the seed mix, and placement of tree and shrub seedlings, if required. The hauling and placement of growth medium, if not addressed under earthwork, should be included.

- Mitigation – Mitigation may include avoiding, minimizing, rectifying and reducing or eliminating the impact, or compensating for the impact. The cost of any deferred mitigation the BLM is requiring the operator to perform must be included in the reclamation cost estimate. For example, the operator is required to develop five acres of wetlands to compensate for disturbance elsewhere on the project area. Until that wetland development is completed the reclamation cost estimate should include the cost of that mitigation.
- Long-term Operation, Maintenance and Monitoring – Long-term operation, maintenance and monitoring costs, that are not addressed in a trust fund established under 43 CFR 3809.552(c), need to be included in the reclamation cost estimate.

In estimating the cost to perform these reclamation, closure, mitigation and monitoring tasks, the operator's estimate must identify the relevant O&M costs relating to reclamation including:

1. Equipment rental or acquisition costs.
2. Equipment operation costs.
3. Equipment maintenance costs.
4. Cost of operating supplies.
5. Labor costs for operations, maintenance and supervision.
6. Reclamation materials acquisition costs.
7. Mobilization and demobilization costs.

The attached *Reclamation Cost Estimate Summary Sheet* (Attachment 2) is provided as an aid in the process of documenting the reclamation cost estimate. Also attached is a *Reclamation Financial Guarantee Checklist* (Attachment 3) that should be used in calculating the engineering and environmental costs required to properly stabilize and reclaim the disturbed area. The checklist is designed to accompany the *Reclamation Cost Estimate Summary Sheet*. Neither the summary sheet nor the check-list are all-inclusive nor are they required, but both are intended to serve as a reminder of issues that should be considered.

Additional sources that may be useful in conducting a cost analysis are: applicable parts of the Office of Surface Mining "Handbook for Calculation of Reclamation Bond Amounts" (<http://www.wrcc.osmre.gov/>), BLM's Solid Minerals Reclamation Handbook H-3042-1, the Caterpillar Performance Handbook, Western Mine Engineering, Inc. (use for operator estimates only-does not consider third party contract estimates), R.S. Means Site Work Cost Data, Dataquest (equipment operating and owning costs), Rental Rate Blue Book for Construction Equipment, and Skills & Knowledge of Cost Engineering.

### **BLM Administrative Costs**

The BLM must ensure the cost of reclamation is estimated as if BLM were hiring a contractor to perform all required reclamation. This will include costs that the operator does not normally encounter. The BLM reviewer will need to pay attention to costing standards that are in part based on the Federal Acquisition Regulations (FAR). It is recommended that the responsible BLM specialist coordinate with their state procurement analyst concerning current labor wages, contracting requirements, and advice on various types of contracts, contract language, and administration.

In reviewing the operator's reclamation cost estimate, the Field Office may also need to determine what administrative costs the operator may have included with their reclamation O&M costs. For example, operator's labor cost estimates may include base pay, payroll loading, overhead and profit. A typical dozer operator rate in Idaho, in 2002, was \$37.59 to \$40.25 per hour. This rate included the base pay plus 14.6 percent payroll loading, 10 percent overhead, and 6 percent profit.

To avoid overlooking or double accounting any of the identified administrative costs, e.g. contractor profit, the operator must document what administrative costs are included in their labor costs or other O&M costs. This may be done by itemizing the cost estimates or by providing BLM with a signed statement that identifies the specific administrative costs that are included in their estimated O&M costs.

This guidance contains suggested percentages for some of these administrative costs. Unless otherwise noted, these suggested percentages should be treated as rules-of-thumb and not as precise amounts specified by the regulations. Figures or percentages, other than those listed below, should be included in a calculation if they are explicitly addressed in a Federal-State agreement regarding the financial guarantee and/or are required by Federal or State law.

Unless otherwise noted, the administrative cost categories identified below should be included in the reclamation cost estimate.

- Engineering, Design and Construction (ED&C) Plan - Most reclamation plans submitted with Plans of Operations do not provide the details needed for reclamation construction purposes. In addition, if there is a premature cessation of mining activity, additional site characterization will be needed to develop the engineering specifications and drawings required for contracting. Should the operator fail to reclaim, the BLM may need to undertake a number of tasks including:
  - Preparation of maps and plans to show the extent of required reclamation and collect detailed information for quantities.
  - Survey of topsoil and waste stockpiles to determine amount of material available.
  - Sampling and analysis of waste rock, tails, heap material, surface and ground water, etc.
  - Sampling and analysis of topsoil and waste piles to determine whether special handling or treatment is necessary.
  - Evaluation of structures to determine requirements for demolition and removal.
  - Evaluation of storm water facilities and process solutions or water impoundments to determine if treatment, clean out, or other improvements are necessary.

This information is then used to develop the ED&C plan needed for contacting purposes. In addition, it may be necessary to prepare a supplemental environmental analysis before reclamation may commence.

Reported costs for preparation of this required information have ranged from 2 to 20 percent of the estimated reclamation O&M costs. The actual cost will depend to a great extent on the specifics, including reclamation complexities, of the proposed operation. The amount or percentage you apply should be based on available data within your state. Absent specific local or state data, we recommend the ED&C costs be estimated as 4 to 8 percent of the estimated reclamation O&M costs. Inclusion of a line item for the development of an ED&C plan may not, however, be necessary for all operations. Specifically, small operations, such as Notice-level operations, may not require the inclusion of funds to collect, analyze and develop the detailed engineering information. With small, uncomplicated reclamation efforts contracting and construction may be able to proceed without developing an ED&C plan.

- Contingency – Contingency allowance is for cost overruns that regularly occur but cannot be ascertained when an operation is being reviewed. Contingency costs generally reflect the level of detail and completeness of the cost estimate, as well as the level of uncertainty in the assumptions used for the reclamation cost estimate. With the development of an ED&C plan many of the unforeseen circumstances and costs are identified. Contingency costs do not, however, include changes in the scope or unforeseeable or unanticipated events such as earthquakes, labor strikes or floods.

Federal and state agencies that routinely prepare construction cost estimates apply contingencies, ranging from 3 to 45 percent of the reclamation O&M costs. You should base the amount you use on available reclamation or construction contract information within your state. Absent reliable local or state information, we recommend the inclusion of a contingency of 4 to 10 percent of the estimated reclamation O&M costs. Where State law specifies the amount, use that figure. Where the proposed operation involves a relatively small, uncomplicated reclamation effort, and development of an ED&C plan is not anticipated, there may not be a need to include a contingency line item. It is advisable to ensure a contingency is included for operations with estimated reclamation O&M costs over \$100,000. As with an ED&C plan, reclamation cost estimates for Notice-level operations may not require the inclusion of a contingency allowance.

- Contractor Profit – Most contracts include a contractor profit over and above the estimated reclamation O&M costs. Reported prime contractor's profits and overheads on existing contracts cover a wide range of values (10 to 35 percent). For financial guarantees, we recommend you use 10 percent of the estimated O&M costs. Where state or local contract information suggests a different amount or where State law specifies the amount, use that figure. As noted above, some contractors include contractor profit in their O&M estimate. To avoid calculating contractor profit twice, the operator's O&M estimate must document the inclusion of contractor profit.
- Liability Insurance - The contractor's liability insurance premium should be estimated as 1.5 percent of the estimated labor costs for the project and included in the reclamation cost estimate. As with contractor profit, if the liability insurance is included in the O&M estimate, this needs to be documented.
- Payment and Performance Bonds - A set amount equal to 3 percent of the estimated O&M costs for the payment of premiums for both a performance bond and a payment bond as required by the Miller Act with estimated contract costs over \$100,000 (40 U.S.C. 270 et seq.) should be included in the reclamation cost estimate.
- BLM Contract Administration - BLM's labor and operations costs for the Field and State offices to administer the contract should be included in the financial guarantee. Reported contract administration costs range from 2 to 25 percent. We estimate BLM's contract administration and inspection cost for reclamation contracts as 10 to 18 percent of the estimated O&M costs, depending on the size and complexity of the proposed operation. The actual cost will depend to a great extent on the specifics, including reclamation complexities, of the proposed operation.

Where data is available you should review your records to determine appropriate costs for your state. Generally the larger the amount of the financial guarantee the lower the percentage needed for contract administration.

- **BLM Indirect Costs** - BLM's indirect costs for contract administration must be included in the amount of the required financial guarantee. The indirect cost rate is a fixed 21 percent of the estimated BLM contract administration cost.

If BLM is required to administer a reclamation contract under a forfeited financial guarantee, the funds made available by this 21 percent will remain within the state where the reclamation work will be done, and are available to pay for within-state indirect costs (building rental, telephone, etc.) associated with the project and any project support needed from other offices such as the Denver Service Center, contract officers or inspectors.

### **Alternative Method for Notice Operations**

For proposed exploration to be conducted under a Notice it may be appropriate for BLM to develop and use a standard reclamation cost schedule, such as the attached spreadsheet (Attachment 4-3), in lieu of detailed calculations of financial guarantee amounts based on engineering designs. The concept behind the use of a standard amount for a reclamation cost estimate is to keep the workload in calculating the reclamation costs commensurate with the risk associated with the activity. A schedule may be developed based on local/regional costs to reclaim typical notice-level activities (roads, drill pads, drill-hole abandonment, trenches, pits, structure removal, site stabilization, re-vegetation etc.) for specific kinds of terrain (topography). Such a schedule may be developed by the BLM specialist conducting a survey of local/regional-licensed contractors/excavators to determine an average reclamation cost for a specific activity. The cost estimate may be expressed in dollars per acre, dollars per linear foot, or some other unit of measure that is appropriate for the particular activity.

Attachment 4 (*Reclamation Cost Model for Notice-Level Operations*) is an example of a standard reclamation cost schedule concept that has been adapted to a cost model (spreadsheet). The model can be modified to accommodate different sizes and types of equipment for specific activities and terrains in order to develop the input costs.

A standard reclamation cost estimate should only be used where the Notice operation meets the activity and terrain profile used in establishing the standard amount. The use of a standard schedule for the reclamation cost estimate is optional and an engineering cost analysis is always an acceptable alternative.

Where a BLM State or Field Office develops a reclamation cost schedule for estimating the amount of the required financial guarantee for Notice operations, the schedule must be reviewed every two years to ensure the costs inputs are kept current. In all cases, the established financial guarantee should be sufficient to fully reclaim the site, using a third party.

### **Periodic Review**

The BLM must provide a periodic review of reclamation cost estimates and financial guarantees for ongoing operations. The following establishes the maximum time period the BLM may allow to elapse between reviews. The BLM has the authority to require a more frequent review of the reclamation cost estimate and financial guarantee at the discretion of the authorized officer.

- Reclamation cost estimates and financial guarantees for Notice operations must be reviewed at time of extension under 43 CFR 3809.333.

- Reclamation cost estimates and financial guarantees for Plans of Operations must be reviewed at least every three years.
- Where the BLM has an agreement under 43 CFR 3809.200 with the State that requires a review more frequent than every two years for Notices or every three years for Plans of Operations, reviews must be conducted in conformance with that agreement.
- Where the Notice or Plan of Operations is modified, a review must be conducted at the time of modification. The reclamation cost estimate and financial guarantee review must be for the entire operation, not just the modification.
- Where the financial guarantee is for a part of the operation, as provided under 43 CFR 3809.553, BLM must review the amount and terms of the financial guarantee annually.

Where the BLM identifies any deficiency in the amount of the required financial guarantee, the Field Office must immediately issue a decision requiring the operator provide the BLM with the revised amount.

### **Review Results and Decisions**

Acceptable Review Results - When you have received an estimate that is acceptable, you must provide the operator with a written decision as to the amount of the required financial guarantee (43 CFR 3809.554(b)). An operator may not begin operations under a new or modified Notice or approved Plan of Operations without first providing BLM with an acceptable financial guarantee that meets the requirements of 43 CFR 3809.551 thru 3809.572. The BLM office responsible for adjudicating financial guarantees must provide the operator with a written decision as to the acceptability of the financial guarantee.

All line items contained in an approved reclamation cost estimate are not to be considered as the limits of expenditures in that respective category or task should financial guarantee forfeiture be necessary. The line items listed are solely for the purpose of arriving at a total financial guarantee amount. This total amount may be spent however the BLM deems necessary to implement the approved reclamation plan, and does not represent a reclamation cost constraint. Care should be taken that the financial guarantee instrument correctly reflects this policy.

Notices on file with the BLM on January 20, 2001 that are extended as provided for under 43 CFR 3809.333, may continue operations for 60 days from receipt of the decision to submit an acceptable financial guarantee (WO IM 2003-042).

Unacceptable Review Results - If you find the operator has incorrectly calculated operating and maintenance costs or you find that the estimate is based on out-of-date cost data that does not reflect the actual cost of reclamation; the estimate will not be accepted. When an estimate is not acceptable, you must notify the operator, in writing (decision), of the unacceptability, identify the deficiencies or errors that led you to your conclusion, require a submission of a corrected calculation, and a due date when the revised reclamation cost estimate must be submitted.

You must also advise the operator to incorporate the administrative costs outlined above if they are not included in the estimate.

Where the reclamation cost estimate for a new Notice is not acceptable to the BLM, the Notice will not be considered complete as required under 43 CFR 3809.301. A Plan of Operations reclamation cost estimate should be submitted by the operator at a time specified by BLM (43 CFR 3809.401(d)).

If you find that the estimate for a Notice to be extended under 43 CFR 3809.333 is not acceptable, you must issue a decision (Additional Information Required) as described in WO IM 2003-042, giving the operator 30 days from receipt to provide all of the requested information.

Appeal of Review Decisions – Decisions relating to the acceptability or unacceptability of a financial guarantee are subject to appeal under the provisions of 43 CFR 3809.800. An operator may elect to seek a State Director review under 43 CFR 3809.800(a) or file an appeal directly with the Office of Hearings and Appeals (OHA) under 43 CFR 3809.801. When the review and evaluation of a financial guarantee and/or instrument has been conducted by the State Office, a request for State Director review under 43 CFR 3809.806 may not be accepted.

## RECLAMATION COST ESTIMATION SUMMARY SHEET

This cost estimation summary sheet is provided to assist the operator and BLM in calculating the reclamation cost estimate. The summary sheet is designed to accompany the Reclamation Cost Checklist. The summary sheet is not all inclusive nor is it required.

Notice [ ] Plan of Operations [ ]

BLM Case-file No. \_\_\_\_\_

Project Name: \_\_\_\_\_

Enter those values in the cost estimate that are appropriate to this project. All reclamation costs are to be calculated as third party contracts. This summary sheet is to be accompanied by a worksheet describing how each itemized cost was calculated.

### A. EARTHWORK/RECONTOURING

<u>ITEM</u>	<u>LABOR</u> <sup>1</sup>	<u>EQUIPMENT</u>	<u>MATERIALS</u>	<u>TOTAL</u>
1. Roads	\$ _____	\$ _____	\$ _____	\$ _____
2. Drill Site(s)	\$ _____	\$ _____	\$ _____	\$ _____
3. Drill Hole Abandonment <sup>2</sup>	\$ _____	\$ _____	\$ _____	\$ _____
4. Pits/Adits/Trenches	\$ _____	\$ _____	\$ _____	\$ _____
5. Process Ponds	\$ _____	\$ _____	\$ _____	\$ _____
6. Heaps	\$ _____	\$ _____	\$ _____	\$ _____
7. Dumps (Waste & Landfill)	\$ _____	\$ _____	\$ _____	\$ _____
8. Tailings	\$ _____	\$ _____	\$ _____	\$ _____
9. Structure & Building Areas	\$ _____	\$ _____	\$ _____	\$ _____
10. Storage & Equipment Areas	\$ _____	\$ _____	\$ _____	\$ _____
11. Drainage Control	\$ _____	\$ _____	\$ _____	\$ _____
12. Mobilization/Demobilization	\$ _____	\$ _____	\$ _____	\$ _____
13. Miscellaneous <sup>3</sup>	\$ _____	\$ _____	\$ _____	\$ _____
SUBTOTAL	\$ _____	\$ _____	\$ _____	\$ _____

### B. REVEGETATION/STABILIZATION

<u>ITEM</u>	<u>LABOR</u> <sup>1</sup>	<u>EQUIPMENT</u>	<u>MATERIALS</u>	<u>TOTAL</u>
1. Roads	\$ _____	\$ _____	\$ _____	\$ _____
2. Drill Site(s)	\$ _____	\$ _____	\$ _____	\$ _____
3. Pits/Adits/Trenches	\$ _____	\$ _____	\$ _____	\$ _____
4. Process Ponds	\$ _____	\$ _____	\$ _____	\$ _____
5. Heaps	\$ _____	\$ _____	\$ _____	\$ _____
6. Dumps (Waste & Landfill)	\$ _____	\$ _____	\$ _____	\$ _____
7. Tailings	\$ _____	\$ _____	\$ _____	\$ _____
8. Structure & Building Areas	\$ _____	\$ _____	\$ _____	\$ _____
9. Storage & Equipment Areas	\$ _____	\$ _____	\$ _____	\$ _____
10. Drainage Control	\$ _____	\$ _____	\$ _____	\$ _____
11. Monitoring	\$ _____	\$ _____	\$ _____	\$ _____
12. Miscellaneous <sup>3</sup>	\$ _____	\$ _____	\$ _____	\$ _____
SUBTOTAL	\$ _____	\$ _____	\$ _____	\$ _____

**C. DETOXIFICATION/WATER TREATMENT/DISPOSAL OF WASTES**

<u>ITEM</u>	<u>LABOR<sup>1</sup></u>	<u>EQUIPMENT</u>	<u>MATERIALS</u>	<u>TOTAL</u>
1. Process Ponds/Sludge	\$ _____	\$ _____	\$ _____	\$ _____
2. Heaps	\$ _____	\$ _____	\$ _____	\$ _____
3. Dumps (Waste & Landfill)	\$ _____	\$ _____	\$ _____	\$ _____
4. Tailings	\$ _____	\$ _____	\$ _____	\$ _____
5. Surplus Water Disposal	\$ _____	\$ _____	\$ _____	\$ _____
6. Fluid Management <sup>4</sup>	\$ _____	\$ _____	\$ _____	\$ _____
7. Monitoring	\$ _____	\$ _____	\$ _____	\$ _____
8. Miscellaneous <sup>3</sup>	\$ _____	\$ _____	\$ _____	\$ _____
SUBTOTAL	\$ _____	\$ _____	\$ _____	\$ _____

<b>D. STRUCTURE, EQUIPMENT AND FACILITY REMOVAL</b>	<u>LABOR<sup>1</sup></u>	<u>EQUIPMENT</u>	<u>MATERIALS</u>	<u>TOTAL</u>
	\$ _____	\$ _____	\$ _____	\$ _____

<b>E. HAZARDOUS MATERIALS<sup>5</sup></b>	<u>LABOR<sup>1</sup></u>	<u>EQUIPMENT</u>	<u>MATERIALS</u>	<u>TOTAL</u>
	\$ _____	\$ _____	\$ _____	\$ _____

<b>F. MITIGATION<sup>6</sup></b>	<u>LABOR<sup>1</sup></u>	<u>EQUIPMENT</u>	<u>MATERIALS</u>	<u>TOTAL</u>
	\$ _____	\$ _____	\$ _____	\$ _____

<b>G. SUBTOTAL – OPERATIONAL &amp; MAINTENANCE COSTS (A through F)</b>	\$ _____	\$ _____	\$ _____	\$ _____
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**H. ADMINISTRATIVE COSTS**

1. Engineering, Design and Construction (ED&C) Plan <sup>7</sup>	\$ _____
2. Contingency <sup>8</sup>	\$ _____
3. Insurance <sup>9</sup> (On Site Liability)	\$ _____
4. Bond <sup>10</sup> (Performance and Payment)	\$ _____
5. Contractor Profit <sup>11</sup>	\$ _____
6. BLM Contract Administration <sup>12</sup>	\$ _____
7. BLM Indirect Cost <sup>13</sup>	\$ _____
SUBTOTAL	\$ _____

<b>I. GRAND TOTAL (G and H)</b>	\$ _____
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Attach sources/information used in cost estimate (examples: Caterpillar Performance Handbook, contractor's estimate, BLM state office procurement analyst, etc.).

## RECLAMATION COST ESTIMATION SUMMARY SHEET FOOTNOTES

1. Federal construction contracts require Davis-Bacon wage rates for contracts over \$2,000. Wage rate estimates may include base pay, payroll loading, overhead and profit. To avoid double counting of any of the identified administrative costs the operator must itemize the components of their labor cost estimates or provide BLM with a signed statement, under penalty of USC 1001, that identifies what specific administrative costs are included in the quoted hourly rate.
2. The reclamation cost estimate must include the estimated plugging cost of at least one drill hole for each active drill rig in the project area. Where the submitted Notice or approved Plan of Operations calls for drill holes to be plugged, but doesn't specifically require the drill holes be plugged before the drill rig has been moved from the drill pad, the reclamation cost estimate must include the plugging cost for those drill holes. For all drill holes and wells scheduled to be left open, the estimated plugging cost must be included in the reclamation cost estimate. Where the approved Plan of Operations proposes immediate mining through an area where the drilling is to occur, and the cost of the post-mining reclamation is included in the reclamation cost estimate, the cost estimate does not need to include the plugging costs for those drill holes.
3. Miscellaneous items should be itemized on accompanying worksheets.
4. Fluid management should be calculated only when mineral processing activities are involved. Fluid management represents the costs of maintaining proper fluid management to prevent overflow of solution ponds through premature cessation or abandonment of operations. Calculate a minimum six month direct cost estimate which includes power, supplies, equipment, labor and maintenance.
5. Handling of hazardous materials includes the cost of decontaminating, neutralizing, disposing, treating and/or isolating all hazardous materials used, produced, or stored on the site.
6. Any mitigation measures required in the Plan of Operations must be included in the reclamation cost estimate. Mitigation may include measures to avoid, minimize, rectify and reduce or eliminate the impact, or compensate for the impact.
7. Engineering, design and construction (ED&C) plans are often necessary to provide details on the reclamation needed to contract for the required work. To estimate the cost to develop an ED&C plan use 4-8% of the O&M cost. Calculate the ED&C cost as a percentage of the O&M cost as follows: up to and including \$1 million, use 8%; over \$1 million to \$25 million, use 6%; and over \$25 million, use 4%. Inclusion of a line item for the development of an ED&C plan may not be necessary for small operations, such as notice-level exploration. With small, uncomplicated reclamation efforts contracting may be able to proceed without developing an ED&C plan.
8. A contingency cost is included in the reclamation cost estimation to cover unforeseen cost elements. Calculate the contingency cost as a percentage of the O&M cost as follows: up to and including \$500,000, use 10%; over \$500,000 to \$5 million, use 8%; over \$5 million to \$50 million, use 6%; and greater than \$50 million, use 4%. As with the ED&C cost, inclusion of a contingency cost may not be necessary for small operations, such as notice-level exploration.
9. Insurance premiums are calculated at 1.5% of the total labor costs. Enter the premium amount if liability insurance is not included in the itemized unit costs.
10. Federal construction contracts exceeding \$100,000 require both a performance and a payment bond (Miller Act, 40 USC 270et seq.). Each bond premium is figured at 1.5% of the O&M cost. Enter the sum of both premium costs on this line.
11. For Federal construction contracts, use 10% of estimated O&M cost for the contractor's profit.
12. To estimate the contract administration cost, use 6 to 10% of the operational and maintenance (O&M) cost. Calculate the contract administration cost as a percentage of the O&M cost as follows: up to and including \$1 million, use 10%; over \$1 million to \$25 million, use 8%; and greater than \$25 million use 6%.
13. BLM's indirect cost rate is 21% of BLM's contract administration costs.

## **RECLAMATION COST CHECKLIST**

This checklist is provided to assist the operator and BLM in calculating the engineering and environmental costs required to properly stabilize and reclaim the area disturbed by mineral exploration and/or mining operations. The checklist is designed to accompany the Reclamation Cost Estimation Summary Sheet. It is not all inclusive nor is it required, but is intended to serve as a reminder of issues that should be considered.

### **Access roads and drill pads**

1. Mobilization and demobilization.
2. Recontouring or regrading to approximate the original topography as closely as possible.
3. Removal of culverts.
4. Ripping or scarifying the surface.
5. Water diversion construction.
6. Restoration or stabilization of drainage areas or stream beds.
7. Revegetation.

### **Drill hole and well abandonment**

1. Mobilization and demobilization.
2. Plugging, capping, and segregation of drill holes from the ground water system.
3. Drill-hole and well (water, monitoring and piezometer) abandonment must meet all applicable Federal and State standards.

### **Trenches, pits, shafts, and adits**

1. Mobilization and demobilization.
2. Recontouring or regrading to approximate the original topography as closely as possible.
3. Revegetation.
4. Securing portals from public entry.

### **Waste rock dumps, overburden, and interburden storage areas**

1. Encapsulation, mixing or other engineered placement method in controlling acid rock drainage (ARD) migration.
2. Recontouring and regrading to approximate the surrounding topography as closely as possible to enhance stability, reduce susceptibility to erosion, and facilitate efforts to establish vegetation.
3. Diversion of run-on.
4. Covering with rock, clay, topsoil, other growth medium or other cover material.
5. Revegetation.

### **Dams for tailings ponds**

1. Covering with rock, clay, topsoil, other growth medium or other cover material.
2. Revegetation.
3. Rendering the dam incapable of storing any mobile fluid in a quantity which could pose a threat to the stability of the dam, or to public safety.
4. Construction of temporary containment basins and water treatment facilities for leakage or outflow of effluent.

### **Impoundment for tailings**

1. Regrading to promote run-off and reduce infiltration.
2. Covering with waste rock, clay, topsoil, other growth medium or other cover material.
3. Revegetation.
4. Diversion of run-on.
5. Temporary containment basins and water treatment facilities for leakage or outflow of effluent.

### **Heaps from leaching**

1. Cost of maintaining proper fluid management to prevent overflow of solution ponds through premature cessation or abandonment of the operation (six month direct cost estimate for recirculating process fluids). Include the cost of a Process Fluid Inventory, which typically runs from \$15,000 to \$35,000, depending on site complexity.
2. Rinsing, detoxification and neutralization procedures as approved in the notice.
3. Containment and treatment of outflows of residual chemicals or fluids from the heaps, including any disposal of surplus or drain down water. Include all engineering, development and reclamation costs.
4. Diversion of run-on.
5. Regrading to enhance structural stability, promote run-off, reduce infiltration, and control erosion.
6. Covering with waste rock, clay, topsoil, other growth medium or other cover material.
7. Stabilization and revegetation.

### **Solution ponds, settling ponds, and other non-tailings impoundments**

1. Backfilling and grading as approved in the notice.
2. Restoration of the pre-disturbance surface water regime, if appropriate.
3. Proper disposal of process pond sludge.

### **Building foundations, facilities, structures and other equipment**

1. Demolition costs to the level of the foundation and burial costs of the demolition debris on site, in conformance with applicable solid waste and hazmat disposal requirements.
2. Salvage operations and sale costs. No provision for salvage value or credit is permitted.
3. Off-site disposal costs of "1" above, in conformance with applicable solid waste disposal and hazmat requirements.
4. Costs of continued use in a manner that is consistent with the proposed post mining land use.

### **Open pit mines**

1. Providing for the public safety.
2. Stabilization of pit walls or rock faces where required for public safety.
3. Construction and maintenance of berms, fences, or other means of restricting public access.
4. Costs associated with the creation and maintenance of a lake for recreation, wildlife enhancement, or other beneficial use.
5. Revegetation.

### **Underground mines**

1. Sealing shafts, adits, portals, and tunnels to prevent access.
2. Construction and maintenance of berms, fences, or other means of restricting access.

### **Revegetation**

1. Application of top soil or other growth medium.
2. Seed bed preparation.
3. Selection of appropriate species of seeds or plants (consult BLM staff specialist).
4. Addition of soil amendments such as fertilizers, mulches, or other compounds to assist in plant growth.
5. Planting or seeding (equipment, personnel, cost of seeds/plants).

### **Site Maintenance, Monitoring, and Evaluation**

1. Any site monitoring costs as required by the BLM.
2. Monitoring well costs for heaps, leach fields, bioreactors and tailings ponds as required by the [insert the requirements mandated by your state's mining and/or environmental regulatory agency].
3. Evaluation to determine whether the revegetation and slope stability meet the criteria established for bond release or project closeout if work is done by BLM contractor.

## Reclamation Cost Model for Notice-Level Operations

This Reclamation Cost Model (model) is provided as an example of an optional method to simplify the reclamation cost estimate requirements for Notice-level operations. Use of a reclamation model/schedule is not required nor is it always appropriate. This model is not all inclusive, but is intended to serve as guide in developing a spreadsheet that include cost inputs appropriate for your office.

The BLM Nevada State Office in collaboration with the Nevada Division of Environmental Protection developed this model. The cost inputs used were derived from actual Nevada reclamation costs reported in 2001 and 2002. It is the responsibility of the appropriate BLM office to develop a reclamation cost model with the appropriate input costs. The input costs and the method by which they are derived must be defensible and documented in each case file.

### Reclamation Cost Model Inputs and Assumptions

Operation Inputs - The user of the model would need to enter information about the proposed exploration operation. Where applicable to the proposed operation, linear feet of road (with side slope < 30% and >30%) and acres of non-road disturbance that will need to be reclaimed, and number of feet of open drill hole to be plugged (anticipated to intercept groundwater and not expected to intercept groundwater) will need to be entered into the spreadsheet.

Cost Inputs and Assumptions - The model's cost inputs include mobilization and demobilization costs, labor, equipment and material costs for earthwork, revegetation and hole plugging, and administrative costs. The reclamation operational and maintenance (O&M) costs are shaded light gray in the spreadsheet.

For road reclamation, the cost figures used in the model are based on the use of an excavator as the primary equipment involved in recontouring. The model's cost information for road reclamation assumes an average road width of 14 feet. Pad, sump, trench and other non-road disturbances assume the use of a dozer as the primary heavy equipment for recontouring those features.

The revegetation costs for disturbed areas assume a seed mix that will result in a diverse plant community that includes grasses, forbs, shrubs and/or trees. Such a seed mix may exceed state or local revegetation standards, and/or may not be appropriate for all sites. The application of the seed mix assumes two passes over the disturbed area. The first pass is to harrow (rip or disc) the surface and then a second pass to spread the seed.

Since drill holes are often plugged immediately after testing, the model is set up to cover the maximum number of feet of drill hole that will be left open at any point in time. This approach may not require financial guarantee coverage for all holes that will be drilled. Where the operator is proposing drilling, the reclamation cost estimate must include the estimated plugging cost of at least one drill hole for each active drill rig in the project area. Where the Notice calls for drill holes to be plugged, but doesn't specifically require the drill holes be plugged before the drill rig has been moved from the drill pad, the reclamation cost estimate must include the plugging cost for those drill holes.

For drill hole plugging, a critical variable is whether the drill hole intercepts groundwater. Plugging a wet drill hole, one that intercepts groundwater, it is assumed drilling equipment will be required to properly plug the hole. The cost estimates for plugging wet holes assumes filling the wet horizon with concrete grout, filling the dry horizon with bentonite and capping the hole with a 10-foot concrete plug.

For plugging dry holes, those that do not intercept groundwater, it is assumed no specialized equipment will be necessary. The assumption used in estimating the cost for plugging dry holes is each hole will be filled with bentonite.

The user should keep in mind that the requirements for drill hole plugging may differ from state to state. For example, the Arizona Department of Water Resources regulates all drilling operations and operators involving drill holes exceeding 100 feet or less, if water is expected to be encountered.

The mobilization/demobilization costs are based on the site being 150 miles from the equipment vendor. The average mobilization costs for reclaiming surface disturbances, including roads, pads, sumps and trenches, is \$750 per piece of equipment. Mobilization costs for plugging open drill holes that are anticipated to intercept groundwater is estimated to be \$1,350. Average mobilization costs for plugging open dry drill holes that are not expected to intercept groundwater is \$600. The model is set to only use the 'wet hole' mobilization cost should the user add values to both wet and dry drill holes entries. The user of the model should be aware that these mobilization costs might vary significantly depending on the actual distance from the site to the source of the required equipment.

**Reclamation Cost Model  
For Notice-Level  
Operations**

<b>Linear Feet of Road</b>  <b>Side Slope &lt;30%</b> <b>Side Slope &gt;30%</b>	<b>Linear Feet</b>		<b>Cost/Linear Foot</b>	<b>Road Reclamation</b>
	0	Recontouring Cost <30%	\$1.50	\$0
	0	Recontouring Cost >30%	\$2.40	\$0
		Revegetation Cost	\$0.20	\$0
<b>Acres of Non-Road Disturbance including, Pads, Sumps &amp; Trenches</b>	<b>Acres</b>		<b>Cost/Acre</b>	<b>Pad, Sump &amp; Trench Reclamation</b>
	0	Recontouring Cost	\$2,600.00	\$0
		Revegetation Cost	\$600.00	\$0
		Mobilization Cost	\$750.00	\$0
<b>Drill Holes Open</b> <b>Feet of Open Holes – Wet</b> <b>Feet of Open Holes – Dry</b>	<b>#/Feet</b>		<b>Cost/Foot</b>	<b>Drill Hole Plugging</b>
	0	Plugging Cost - Wet	\$12.00	\$0
	0	Plugging Cost - Dry	\$4.70	\$0
		Mobilization Cost - Wet	\$1,350.00	\$0
		Mobilization Cost - Dry	\$600.00	\$0
				<b><u>Total O&amp;M Cost</u></b> \$0
<b>Administration Costs</b>		Insurance	1.5% Labor Cost	\$0
		Bond Maintenance*	3% O&M Cost	\$0
		Contractor Profit	10% O&M Cost	\$0
		Contract Admin.	10% O&M Cost	\$0
		Indirect Costs	21% Cont. Admin.	\$0
				<b><u>Total Administration Cost</u></b> \$0
<b>Total Bond Amount</b>	<b>Bond Amount</b>			<b>\$0</b>

\* Only Administered if Estimated Contract Costs over \$100,000.

